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# Type C4 Solenoid Pilot Operated Directional Control Valve



## Features

- These compound valves incorporating the functions of a differential circuit, counterbalance valve and a throttle valve, along with a decompression function, make it easy to construct a hydraulic press circuit.

## Nomenclature

※ — C4S ※ — G 06 — 7 QD ※ ※ — 30 — ※ ※ ※  
 1 2 3 4 5 6 7 8 9 10 11 12 13

### 1 Applicable fluid code

No designation: Petroleum-based hydraulic fluid  
 H: Water-glycol hydraulic fluid  
 F: Phosphate ester hydraulic fluid

### 2 Model No.

C4S: Type C4 solenoid pilot valve

### 3 Compound function

No designation: Without throttle function  
 T: With meter-in throttle function at ports A and B

### 4 Connections

G: Gasket mount type

### 5 Nominal diameter

06:  $\frac{3}{4}$

### 6 Switch code

7: Equivalent to 7C

### 7 Circuit code

QD: With counterbalance valve function at port A  
 With decompression function at port B

### 8 Pressure adjustment range of counterbalance valve at port A

1: Up to 7 MPa {Up to 70 kgf/cm<sup>2</sup>}  
 2: Up to 16 MPa {Up to 160 kgf/cm<sup>2</sup>}  
 3: Up to 25 MPa {Up to 250 kgf/cm<sup>2</sup>}

### 9 Voltage code for the solenoid valve

A: AC 100 V (50/60 Hz), AC 110 V (60 Hz)  
 B: AC 200 V (50/60 Hz), AC 220 V (60 Hz)  
 P: DC 24 V

### 10 Design No. (The design No. is subject to change)

### 11 Cartridge valve option code \*1

No designation: Standard cartridge valve type  
 K: Shockless cartridge valve type

### 12 Option code

No designation: Flow rate adjusting screw type  
 D: Digital handle type

### 13 Solenoid pilot valve option code

See the option code table of KSO-G02 on Page G-16 for the options for solenoid pilot valves.

Note: \*1 Applicable only to C4S (without throttle function)

## Specifications

Model No.	Nominal diameter	Maximum operating pressure MPa {kgf/cm <sup>2</sup> }	Maximum flow rate L/min	Permissible back pressure MPa {kgf/cm <sup>2</sup> }	Mass kg
C4S※-G06	$\frac{3}{4}$	25 {250}	400	7 {70} *2	50

Note: \*2 Keep the back pressure of the tank line as small as possible since it is added to the minimum adjustment pressure of the counterbalance valve function.

Refer to KSO-G02 on Page G-16 for the solenoid specifications.

## Sub-plate model code

- The sub-plate is not provided with the valve. Order it separately if required by specifying the model code given in the table below.

Model code	Nominal diameter	Connection port diameter	Mass kg
JS-06M	$\frac{3}{4}$	Rc $\frac{3}{4}$	5.2
JS-06M08		Rc1	

Refer to Page S-9 for the dimensions of the sub-plate.

## Accessories

Model No.	Hexagon socket head cap bolt	Quantity	Tightening torque N·m {kgf·cm}
C4S※-G06	M12 × 90	6	80 to 100 {800 to 1000}

## Handling

### ● Adjusting switching response

- The response can be adjusted by changing the adjusting fixed throttles (NPTF<sup>1</sup>/<sub>16</sub>).
- The opening/closing speeds from port P to port A, from port P to port B, and from port B to port T can be adjusted using the fixed throttle for each cartridge element at PA, PB, and BT.
- At shipment, the product is equipped with fixed throttles of  $\phi 1.4$  at PA and PB and of  $\phi 1$  at BT.

If you require fixed throttles other than these, order them separately by referring to the model codes below.

Model code: T1-16- $\times\times$  ( $\times\times$ : Throttle diameter code) Tightening torque: 6 to 7.5 N·m {60 to 75 kgf·cm}

Throttle diameter code	06	07	08	09	10	12	14	16	18	20	25
Fixed throttle diameter	$\phi 0.6$	$\phi 0.7$	$\phi 0.8$	$\phi 0.9$	$\phi 1$	$\phi 1.2$	$\phi 1.4$	$\phi 1.6$	$\phi 1.8$	$\phi 2$	$\phi 2.5$

### ● Flow rate adjustment method (only with C4ST)

- Turning the flow rate adjusting screw counterclockwise increases the flow rate.
- Since a large force will be required to operate the flow rate adjusting screw when the pressures at ports P, A, B and T increase, adjust the flow rate at 10 MPa {100 kgf/cm<sup>2</sup>} maximum or with the solenoid valve turned off.

### ● Pressure responsiveness adjusting method (counterbalance valve function)

Turning the pressure adjusting screw clockwise increases the pressure.

Model code	Pressure change (MPa) {kgf/cm <sup>2</sup> } per screw revolution
C4S $\times$ -G06-7QD1 $\times$ -30	2.5 {25}/revolution
C4S $\times$ -G06-7QD2 $\times$ -30	4.6 {46}/revolution
C4S $\times$ -G06-7QD3 $\times$ -30	7.9 {79}/revolution

### ● Decompression (depressurizing) response adjusting method

Turning the adjusting screw clockwise increases the response speed.

### ● Differential circuit

A differential circuit can be constructed based on energizing of SOL. a, b, c.

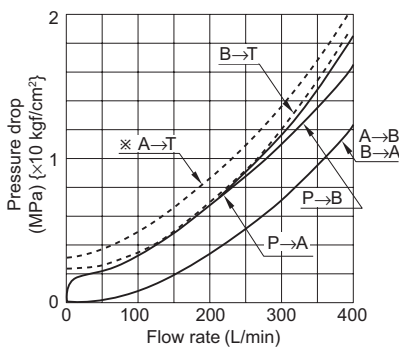
With the meter-in throttle function of C4ST, flows A  $\rightarrow$  B and B  $\rightarrow$  A are controlled with two meter-in throttles.

The meter-out throttle function does not control flows A  $\rightarrow$  B and B  $\rightarrow$  A. It differs from the JIS graphic symbols for hydraulic system at this point.

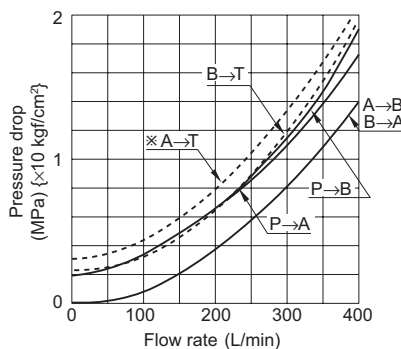
### ● Shocks at switching can be suppressed by using the shockless cartridge valve type (option code: K).

## Performance curves (viscosity: 32 mm<sup>2</sup>/s {cSt})

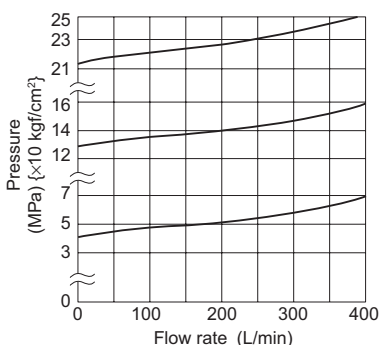
Pressure drop characteristics  
C4S



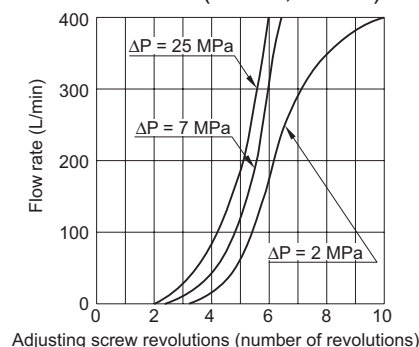
Pressure drop characteristics  
C4S-K, C4ST



Pressure - Flow rate characteristics  
Counterbalance valve function at port A

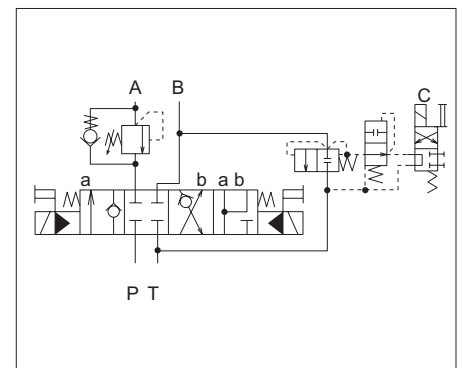


Adjusting screw revolution -  
Flow rate characteristics (C4ST)  
Meter-in throttle (P  $\rightarrow$  A, P  $\rightarrow$  B)

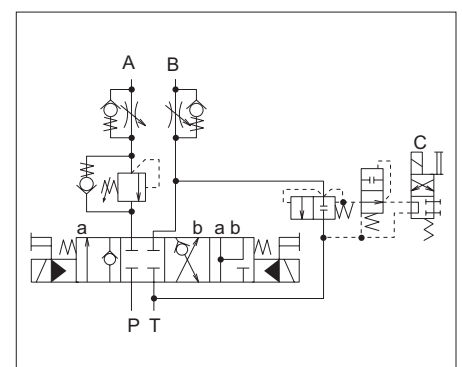


## JIS graphic symbols for hydraulic system

C4S



C4ST



Note: The line marked with (x) indicates the minimum adjustment pressure of the counterbalance valve function.

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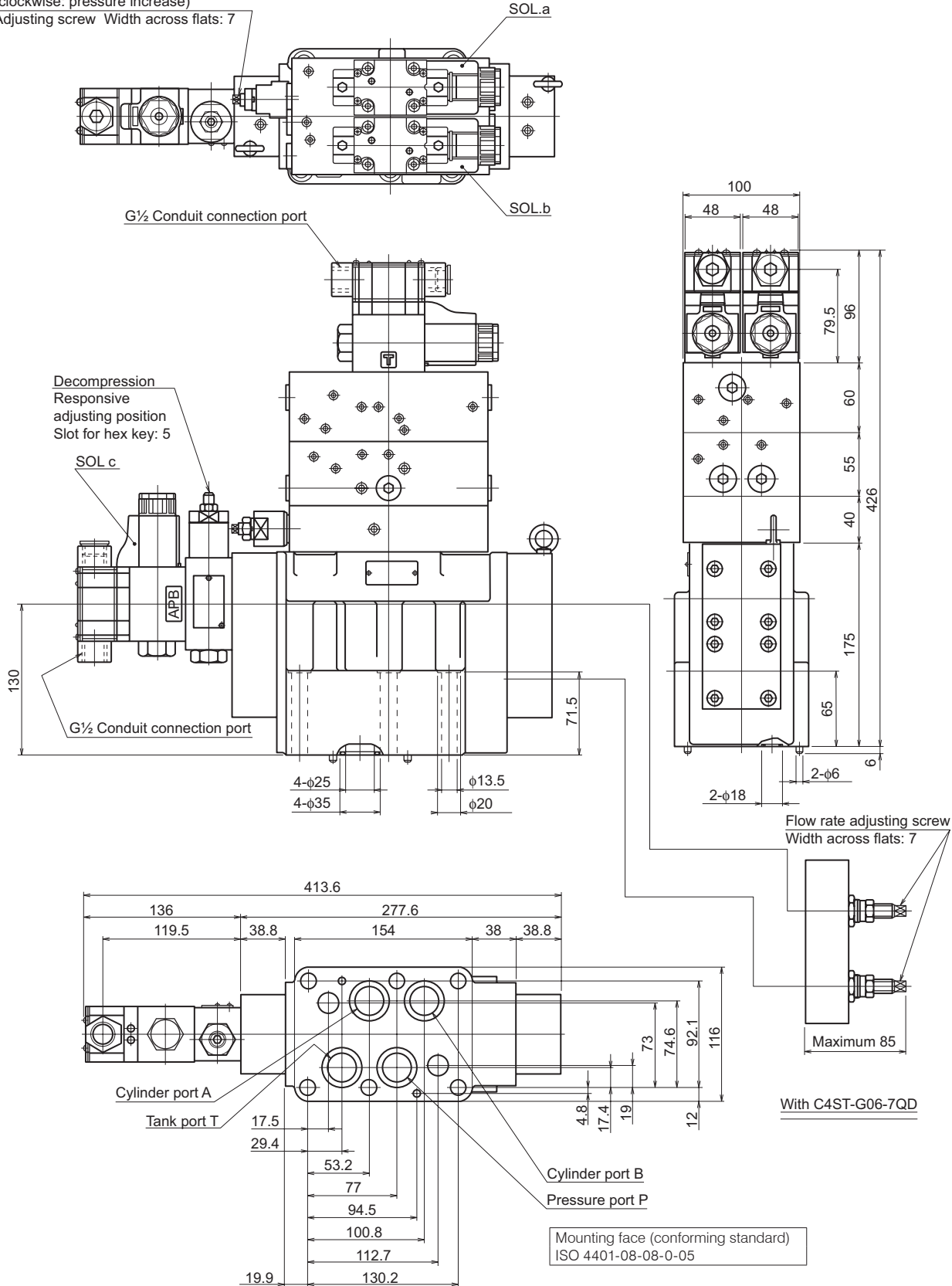
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## External dimension diagram

### ● C4S-G06-7QD

Counterbalance pressure at port A  
(clockwise: pressure increase)

Adjusting screw Width across flats: 7



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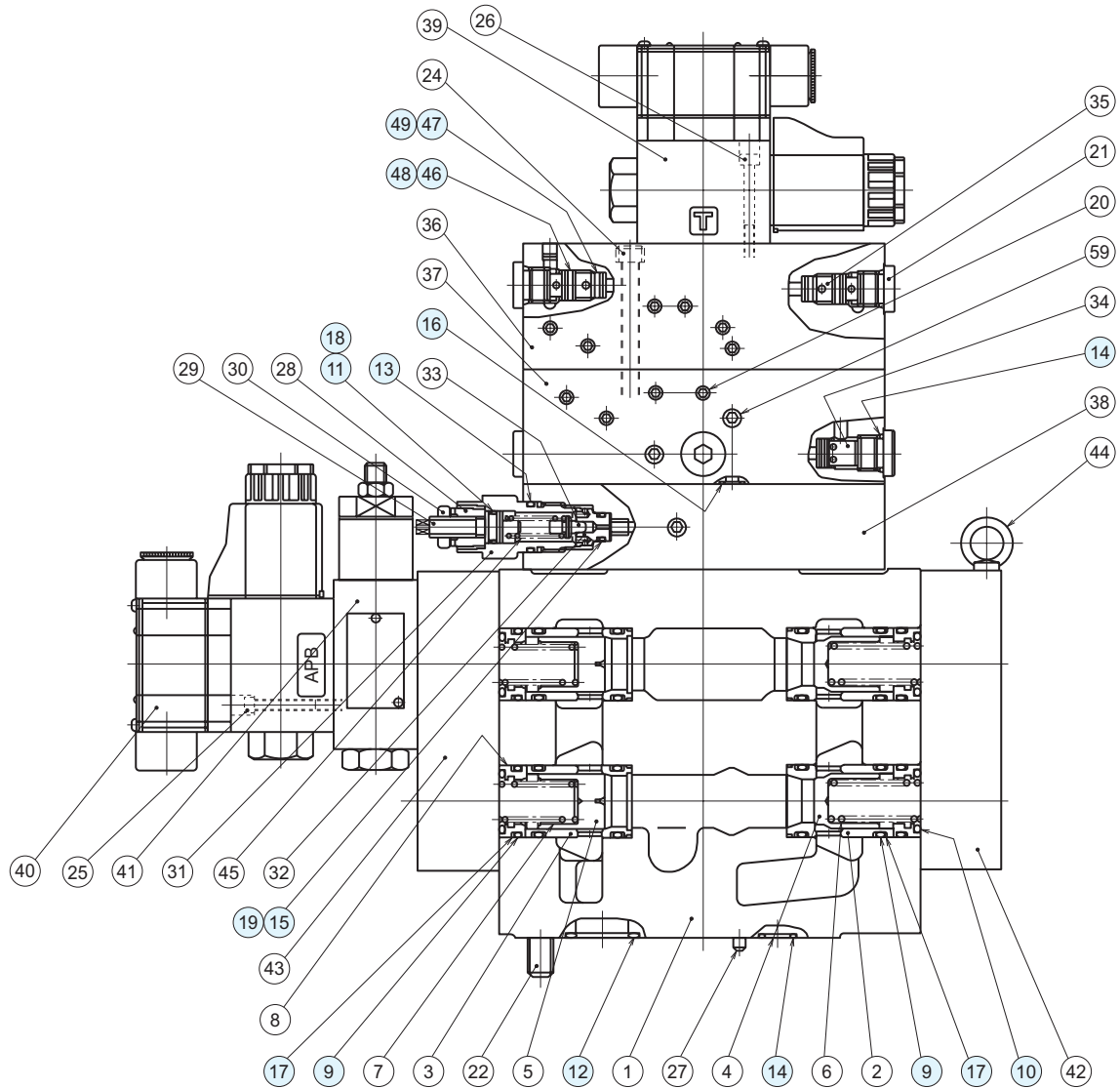
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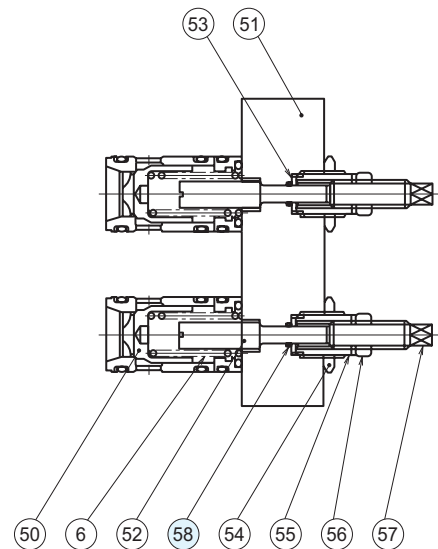
## Sectional structural diagram

● C4S-G06-7QD



Sealing part table

Part No.	Name	Quantity	Part specifications
9	O-ring	12	AS568-122 (NBR, Hs90)
10	O-ring	4	JIS B 2401 1B P24
11	O-ring	1	AS568-014 (NBR, Hs90)
12	O-ring	4	JIS B 2401 1B G30
13	O-ring	1	JIS B 2401 1B P20
14	O-ring	9	JIS B 2401 1B P14
15	O-ring	1	JIS B 2401 1B P10
16	O-ring	32	JIS B 2401 1B P9
17	Backup ring	20	Bias cut for AS568-122
18	Backup ring	1	Bias cut for AS568-014
19	Backup ring	1	JIS B 2407 bias cut P10
46	O-ring	2	AS568-012 (NBR, Hs90)
47	O-ring	2	AS568-013 (NBR, Hs90)
48	Backup ring	2	Bias cut for AS568-012
49	Backup ring	2	Bias cut for AS568-013
58	O-ring	2	AS568-011 (NBR, Hs90)



With C4ST-G06-7QD